REMARKS

Applicant is in receipt of the Office Action mailed April 5, 2005. Claims 1-68 were rejected. Claims 1-4, 6-24, 26-30, 32-40, 42-46, 51-54, 57-62, and 66-68 have been amended. Claims 5, 25, 31, 41, 47, 55, 56, and 63-65 have been canceled. New claims 69-81 have been added. Claims 1-4, 6-24, 26-30, 32-40, 42-46, 48-54, 57-62, and 66-81 are currently pending in the application. Reconsideration of the present case is earnestly requested in light of the following remarks.

Section 102(e) Rejection

Claims 53-60 were rejected under 35 U.S.C. 102(e) as being anticipated by Blowers et al., U.S. Patent No. 6,298,474 (hereinafter "Blowers"). Applicant respectfully traverses this rejection.

In response to the previous Office Action, Applicant argued that Blowers does not teach a GUI that provides access to Data Acquisition (DAQ) operations and does not teach including a DAQ operation in a sequence of operations or acquiring measurement data from a DAQ measurement device. In response to Applicant's arguments, the Examiner stated that receiving an image from a camera is considered to be data acquisition. The Examiner also referenced portions of Blowers that teach performing meteorology functions for the measurement of visual features in an acquired image, such as distances, angles, diameters, etc. However, Applicant respectfully submits that receiving an image from a camera is not what is meant by a DAQ operation, and measuring visual features in an image that has been acquired is not at all the same as acquiring measurement data from a DAQ measurement device. A DAQ operation typically involves acquiring measurement data based on an electrical signal, e.g., an electrical signal from a sensor device. Applicant has amended claim 53 to recite that, "wherein at least one of the DAQ operations included in the sequence is operable to control a DAQ measurement device to acquire measurement data of a device under test based on an electrical signal from a sensor device coupled to the device under test".

Blowers nowhere teaches the use of DAQ operations or a DAQ measurement device. The terms "DAQ" and "Data Acquisition" are entirely absent from Blowers'

disclosure. Also, FIGS. 2 and 3 show several devices in Blowers' machine vision system, but they do not show a DAQ measurement device. Blowers is directed toward developing software for machine vision applications. DAQ measurement devices are typically used in test and measurement applications, e.g., to acquire measurement data of a device under test. Applicant can find no teaching in Blowers regarding the development of software to perform a measurement application involving measurement data received from a DAQ measurement device. Blowers' machine vision system operates on input images acquired by cameras such as shown in FIG. 2, not on measurement data acquired from a DAQ measurement device.

In particular, Blowers does not teach or suggest, "displaying a graphical user interface (GUI) that provides GUI access to a set of operations, wherein the set of operations includes ... one or more DAQ operations," as recited in claim 53. The Office Action states that this element of claim 53 is taught by Blowers at Col. 8, line 61 et seq. However, Applicant can find no teaching or illustration of a GUI that provides GUI access to one or more DAQ operations.

The cited portion of Blowers refers to FIGS. 5 and 6. FIG. 6 illustrates a task sequencer list. Graphical representations or icons are selected from the tool boxes of FIG. 5 which correspond to desired functional tasks and are linked into the tree structure of FIG. 6. FIG. 5 illustrates three tool boxes from which the user may choose icons corresponding to desired functional tasks: a visions tool box, a program options tool box, and a Comms & I/O tool box (see Col. 9, lines 32-34). As described in detail at Col. 9, line 35 – Col. 10, line 12, the visions tool box provides access to vision tools, such as a caliper tool, a feature find tool, a template tool, etc. The visions tool box does not provide access to any DAQ operations. As described in detail at Col. 10, lines 13-63, the program options tool box provides access to navigational tools to customize the flow of the application software, such as a product folder, job folder, If...Then...Else step, etc. The program options tool box does not provide access to any DAQ operations.

Applicant can find no detailed description in Blowers of the Comms & I/O tool box and submits that Blowers contains no teaching or suggestion that the Comms & I/O tool box would provide access to any DAQ operations. As noted above, Blowers is directed toward machine vision applications and contains no teaching at all regarding the

development of software to perform a measurement application involving data acquisition from a DAQ measurement device. Instead, Blowers' machine vision system operates on input images acquired by cameras such as shown in FIG. 2. Blowers does not describe or illustrate the use of DAQ measurement devices at all, and thus there would be no reason for the Comms & I/O tool box to provide access to any DAQ operations.

For reasons similar to those discussed above, Applicant also respectfully submits that Blowers does not teach including a plurality of operations in a sequence, wherein the plurality of operations included in the sequence includes at least one DAQ operation, wherein at least one of the DAQ operations included in the sequence is operable to control a DAQ measurement device to acquire measurement data of a device under test based on an electrical signal from a sensor device coupled to the device under test, as recited in amended claim 53. The Office Action cites Blowers at Col. 4, lines 64-67 and Col. 8, lines 9-19. As per Col. 4, lines 64-67, Blowers teaches that, "the system creates jobs that are programmed through selecting and applying a sequence of tasks," but does not teach that the sequence of tasks includes at least one DAQ operation, as recited in claim 53. As per Col. 8, lines 9-19, this portion of Blowers teaches programming the machine vision system to include custom controls for image processing, image analysis, third party machine vision products, etc., but does not teach a sequence of operations that includes at least one DAQ operation.

Thus, for at least the reasons set forth above, Applicant respectfully submits that Blowers does not teach all the limitations recited in claim 53, and thus claim 53, and the claims dependent thereon, are patentably distinct over Blowers. Furthermore, Applicant respectfully submits that numerous of the claims dependent on claim 53 recite additional limitations that are not taught or suggested by Blowers.

For example, claim 58 recites the additional limitations of, "wherein the prototype is operable to: control an image acquisition device to acquire one or more images of the device under test; and control the DAQ measurement device to acquire the measurement data of the device under test." The Office Action cites Col. 11, line 65 et seq. as teaching these features. However, this portion of Blowers teaches measuring visual features in an acquired image. Measuring visual features in an acquired image of an object is not the

same as acquiring measurement data from the object itself. Blowers does not teach acquiring one or more images of a device under test and controlling a DAQ measurement device to acquire measurement data of the same device under test. Furthermore, the one or more images in claim 58 are acquired by an image acquisition device, and the measurement data is acquired by a DAQ measurement device. Blowers does not teach the use of two different devices, where one is an image acquisition device to acquire images of a device under test and the other is a DAQ measurement device to acquire measurement data of the device under test.

Claim 60 recites the additional limitations of, "automatically generating a graphical program based on the sequence of operations, wherein the graphical program is executable to perform the sequence of operations, wherein the graphical program comprises a plurality of interconnected nodes that visually indicate functionality of the graphical program, wherein automatically generating the graphical program comprises automatically including the plurality of interconnected nodes in the graphical program without user input specifying the nodes." The Office Action refers to the tree structure such as shown in FIG. 7 of Blowers. However, this tree structure is not automatically generated. On the contrary, the icons are included in the tree structure in response to user input selecting the icons (Col. 8, lines 61 – 67). Blowers does not teach the concept of automatically generating a graphical program, wherein automatically generating the graphical program comprises automatically including a plurality of interconnected nodes in the graphical program without user input specifying the nodes.

Section 103(a) Rejection

Claims 1-52 and 61-68 were rejected under 35 U.S.C. 103(a) as being unpatentable over Blowers et al., U.S. Patent No. 6,298,474 (hereinafter "Blowers") in view of Weinhofer, U.S. Patent No. 6,442,442 (hereinafter "Weinhofer"). Applicant respectfully traverses this rejection.

As per claims 1-44 and 61-68, the independent claims recite similar limitations regarding DAQ operations as discussed above with respect to claim 53. For example, amended claim 1 recites as follows:

1. (Currently Amended) A computer-implemented method for creating a prototype that includes motion control, machine vision, and Data Acquisition (DAQ) functionality, the method comprising:

displaying a graphical user interface (GUI) that provides GUI access to a set of operations, wherein the set of operations includes one or more motion control operations, one or more machine vision operations, and one or more DAQ operations;

creating a sequence of operations, wherein creating the sequence comprises including a plurality of operations in the sequence in response to user input selecting each operation in the plurality of operations from the GUI, wherein including the plurality of operations in the sequence in response to the user input selecting each operation in the plurality of operations from the GUI comprises including the plurality of operations in the sequence without receiving user input specifying program code for performing the plurality of operations;

wherein the plurality of operations included in the sequence includes at least one motion control operation, at least one machine vision operation, and at least one DAQ operation, wherein at least one of the DAQ operations included in the sequence is operable to control a DAQ measurement device to acquire measurement data of a device under test based on an electrical signal from a sensor device coupled to the device under test;

wherein the method further comprises storing information representing the sequence of operations in a data structure, wherein the sequence of operations comprises the prototype.

The Office Action states that Blowers teaches these limitations regarding DAQ operations. However, Applicant respectfully disagrees, for reasons similar to those discussed above with respect to claim 53. Applicant thus submits that Blowers and Weinhofer, taken either singly or in combination, do not teach all the limitations of claims 1-44 and 61-68, and thus, these claims are allowable for at least this reason.

Applicant also submits that Weinhofer does not teach including at least one motion control operation in a sequence without receiving user input specifying program code for performing the motion control operation. Weinhofer teaches that the user creates a graphical data flow program that comprises a plurality of interconnected icons, where connections between the icons represent data flow between the icons (Col. 3, line 63 – Col. 4, line 7; and Col. 6, lines 5 – 38). The icons and the connections between the icons constitute graphical program code that defines the functionality of the graphical program. Weinhofer does not teach including motion control operations in a sequence in response to user input, but without receiving user input specifying program code for performing the motion control operations.

Furthermore, Applicant submits that a *prima facie* case of obviousness has not been established for claims 1-52 and 61-68. In particular, Applicant respectfully submits that there is no evidence of any teaching, suggestion, or motivation to combine Blowers and Weinhofer. As held by the U.S. Court of Appeals for the Federal Circuit in *Ecolochem Inc. v. Southern California Edison Co.*, an obviousness claim that lacks evidence of a suggestion or motivation for one of skill in the art to combine prior art references to produce the claimed invention is defective as hindsight analysis. Furthermore, the showing of a suggestion, teaching, or motivation to combine prior teachings "must be clear and particular. . .Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence'." *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999) (Emphasis added).

The Examiner asserts that, "One would have been motivated to make such a combination because an all-purpose graphical automotive controller would have been obtained, as taught by Weinhofer." As Applicant pointed out in the response to the previous Office Action, Applicant can find no teaching in Weinhofer of this alleged "all-purpose graphical automotive controller." Applicant once again respectfully requests the Examiner to cite where Weinhofer teaches this "all-purpose graphical automotive controller". Furthermore, Applicant respectfully submits that teaching an "all-purpose graphical automotive controller" would not amount to a clear and particular teaching or suggestion for combining Blowers with Weinhofer, as required to form a *prima facie* case of obviousness.

Applicant submits that neither Weinhofer nor Blowers contain any clear teaching or suggestion for combining the two references. Blowers is directed toward developing software for machine vision applications. Weinhofer is directed toward developing software for motion control applications. Applicant can find no teaching in Blowers regarding the development of software to perform an application involving motion control as taught in Weinhofer. Similarly, Applicant can find no teaching in Weinhofer regarding the development of software to perform an application involving machine vision as taught in Blowers. Thus, there would be no motivation for incorporating the machine vision operations taught in Blowers into Weinhofer's system or for incorporating the motion control operations taught in Weinhofer into Blowers's system.

In response to Applicant's arguments that there is no clear teaching or suggestion for combining Blowers and Weinhofer, the Examiner asserts that, "In this case, Weinhofer explains how motion controllers are part of many industrial control systems including programmable controller systems (Col. 1, line 48). Blowers teaches a programmable controller system." However, the cited portion of Weinhofer states that, "Motion controllers may for example be provided in the form of modules for a programmable controller system or as PC-based expansion cards or stand-alone units that communicate with the programmable controller system via a network communication link." Applicant submits that this simply describes a motion control system architecture in which motion controllers are provided in the form of modules for a programmable controller system. This says nothing about performing a machine vision application such as taught in Blowers and does not amount to a clear and particular teaching or suggestion for combining Weinhofer with Blowers.

In response to Applicant's arguments, the Examiner also cites Col. 2, line 57 – Col. 3, line 25, where Weinhofer describes that existing programming interfaces do not enable the relationship between various motion control axes to be readily ascertained. To solve this problem, Weinhofer teaches at Col. 4, lines 8-20 that:

> Advantageously, the programming interface according to the preferred embodiment of the invention explicitly indicates the physical relationship between the various motion control axes. The various motion control axes are represented by icons, and the icons are connected with connection lines that represent data flow between the motion control axes. Additional icons are provided that show relationships such as gearing, position cams, time cams, and so on. The programming interface is thus organized based on the physical relationship between the axes, and the physical relationships for the entire system are displayed to the user in a single workspace, without the user having to click on numerous icons. (*Emphasis added*)

Blowers teaches at Col. 2, lines 47-53 that:

> An object of the present invention is to provide a method and system for interactively developing application software for use in a machine vision system and computer-readable storage medium having a program for executing the method wherein the user teaches an imaging programming task without writing any code. Consequently, the user need not be a programmer. (*Emphasis added*)

Thus, Blowers emphasizes that the user is able to develop application software for use in a machine vision system without writing any code, and thus, the user need not be a programmer. In contrast, Weinhofer teaches that the user creates a graphical data flow program that comprises a plurality of interconnected icons (Col. 3, line 63 – Col. 4, line 7; and Col. 6, lines 5 – 38). In creating the graphical data flow program, the user is necessarily a programmer, and the user necessarily writes program code for the graphical data flow program, in the form of icons and data flow lines connecting the icons.

One would not be motivated to combine Weinhofer with Blowers because Weinhofer emphasizes the importance of the interconnected icons in the graphical data flow program, since the icons indicate the physical relationship between the various motion control axes, and also show relationships such as gearing, position cams, time cams, etc. Creating a graphical data flow program by specifying graphical code comprising icons and nodes is an important aspect of Weinhofer's teaching, since the interconnected icons in the graphical data flow program illustrates the physical relationship between the various motion control axes. Thus, Weinhofer actually teaches away from any combination with Blowers, since Blowers teaches developing application software for a machine vision system without the user being a programmer and without the user writing program code.

Applicant thus respectfully submits that claims 1-52 and 61-68 are allowable over the cited references for at least the reasons set forth above. Furthermore, Applicant respectfully submits that numerous ones of the dependent claims recite additional limitations that are not taught by either of the references, taken either singly or in combination.

For example, amended claim 21 recites as follows:

> 21. (Currently Amended) The method of claim 1, wherein the sequence includes two or more motion control operations, and wherein the method further comprises:
>
> displaying a graph illustrating a spatial trajectory cumulatively performed by the two or more motion control operations, wherein the graph provides a visual preview of the spatial trajectory cumulatively performed by the two or more motion control operations.

Weinhofer simply does not teach displaying a graph that illustrates a spatial trajectory cumulatively performed by two or more motion control operations.

As another example, amended claim 29 recites as follows:

> 29. (Currently Amended) The method of claim 1, further comprising:
> automatically converting the sequence of operations to a hardware configuration format usable for configuring configurable hardware of an embedded device to perform the sequence of operations; and
> configuring the configurable hardware of the embedded device to perform the sequence of operations using the hardware configuration format.

Neither reference teaches automatically converting a sequence of operations to a hardware configuration format usable for configuring configurable hardware of an embedded device to perform the sequence of operations.

Applicant also notes that several new dependent claims have been added and respectfully submits that these claims are allowable because the independent claims on which they depend are allowable, as argued above, and also because the cited references do not teach the limitations recited in these claims. For example, new claim 70 recites as follows:

> 70. (New) The method of claim 1,
> wherein the plurality of operations included in the sequence includes a plurality of motion control operations;
> wherein the method further comprises interactively displaying a graph illustrating a spatial trajectory cumulatively performed by the plurality of motion control operations, wherein interactively displaying the graph comprises:
> for each motion control operation in the plurality of motion control operations included in the sequence, updating the graph in response to including the motion control operation in the sequence in order to visually indicate a change in the spatial trajectory, wherein the change in the spatial trajectory is caused by including the motion control operation in the sequence, wherein updating the graph provides interactive visual feedback to the user indicating the change caused by including the motion control operation in the sequence.

Weinhofer does not teach interactively displaying a graph illustrating a spatial trajectory cumulatively performed by the plurality of motion control operations, wherein interactively displaying the graph comprises updating the graph in response to including each motion control operation in the sequence in order to visually indicate a change in the spatial trajectory.

Applicant also respectfully submits that numerous ones of the dependent claims other than those specifically discussed above recite further distinctions over the cited references. However, since the independent claims have been shown to be patentably distinct, a further discussion of the dependent claims is not necessary at this time.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5150-58200/JCH.

Also enclosed herewith are the following items:

☒ Return Receipt Postcard

Respectfully submitted,

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